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ABSTRACT

One of the principal values of audiovisual materials is that they permit the teacher to depart from verbal and printed symbolism, and at the same time to provide a wider real or vicarious experience for pupils. This booklet is designed to aid the teacher in using audiovisual material effectively. It covers visual displays, non-projected materials, tearsheets, field trips, projectors and screens, projected materials, photography, graphics, duplicating, drymount, lamination, audio equipment, the use of color in visuals, and newer media such as television and programed instruction. Each piece of equipment and technique is described briefly; its purposes are listed; and good practices in its use are outlined. Some tips on electrical safety are offered. Preceding the sections on technique are discussions of media programs, cataloging audiovisual materials, selection and evaluation of audiovisual equipment, and the duties of an audiovisual specialist. (JY)

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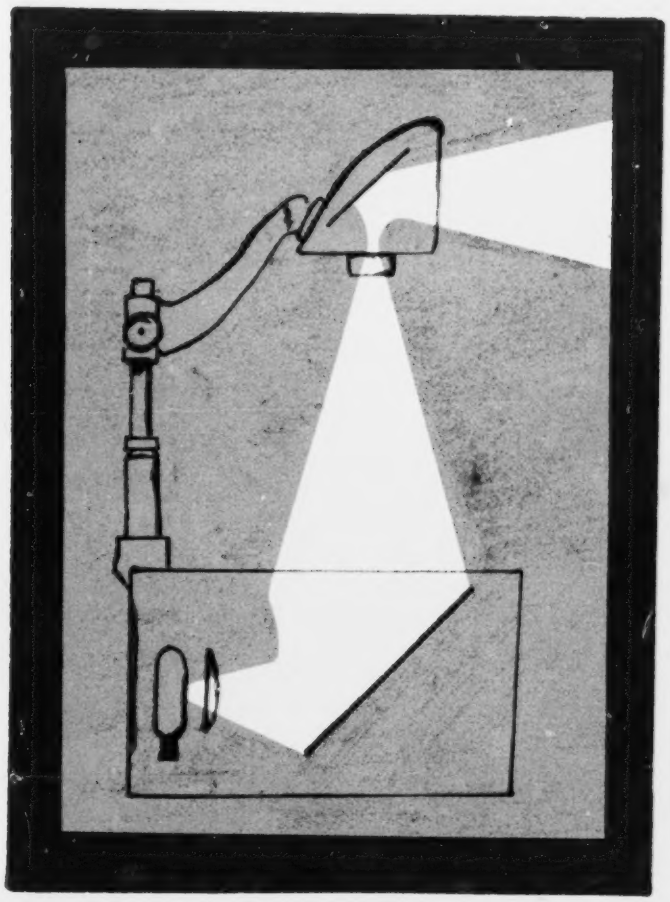
A GUIDE FOR AUDIOVISUAL and NEWER MEDIA

ED040568

Prepared by
The State Audiovisual and Newer Media Committee of the Oklahoma Curriculum Improvement Commission
Instructional Media Division
Curriculum Division



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OKLAHOMA STATE DEPARTMENT OF EDUCATION
D. D. Creech, Superintendent
1970

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A GUIDE
for
AUDIOVISUAL and NEWER MEDIA

Prepared by
The State Audiovisual
and Newer Media Committee
of the
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William D. Carr, Chairman

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FOREWORD

The increasing complexities of modern life are reflected, in part, in the growing variety of materials and technological devices now available to teachers throughout Oklahoma. The expanding use of modern materials and equipment opens new ways to increase the effectiveness and efficiency of instruction. It also presents new and difficult problems in many areas of the field of education to enhance a strong instructional program. Some of these problems are in respect to the planning of instructional facilities, selection of appropriate equipment and materials, providing media personnel to work with teachers and pupils, and the judicious allocation of state and local funds.

This guide is designed to give a working knowledge of some of the more common audiovisual media being used in Oklahoma schools. It is by no means complete, but only a beginning with more to follow.

Sincere appreciation is expressed to each member of the Audiovisual Media Curriculum Committee for his contribution in making this guide possible.

D. D. Creech
State Superintendent of Public Instruction

ACKNOWLEDGMENTS

This guide is a joint project between the Media Division of the State Department of Education and the Oklahoma Curriculum Improvement Commission.

We wish to express our appreciation to all who had a part in the development of this guide. We are listing the names of the Audiovisual Committee, each of whom made a written contribution.

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We would also express special appreciation to the members of the planning committee, who spent many diligent hours selecting materials and developing this guide.

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CONTENTS

FOREWORD i
ACKNOWLEDGMENTS ii
TO THE TEACHER 1
MEDIA PROGRAM 2
AUDIOVISUAL SPECIALIST 5
SELECTION AND EVALUATION OF AUDIOVISUAL EQUIPMENT 7
CATALOGING AUDIOVISUAL MATERIALS 9

EDUCATION BOARDS IN VISUAL DISPLAYS

- Chalkboards 13
- Bulletin Boards 14
- Flannel Boards or Feltboards 15
- Hook-and-Loop Boards 16
- Magnetic Boards 16
- Pegboard Displays 17
- Electric Boards 18

NON-PROJECTED MATERIALS

- Maps and Globes 21
- Charts, Diagrams, Flat Pictures, Graphs, and Posters 22
- Three-Dimensional Non-Projected Materials 23

TEARSHEETS 25

FIELD TRIPS 26

PROJECTORS AND SCREENS

- Opaque Projector 28
- Overhead Projector 29
- Filmstrip Projector 30
- Slide Projector 31
- Motion Picture Projector 33
- Microprojector 34
- Screens 35

PROJECTED MATERIALS

- Filmstrips 36
- Slides 38
- 16mm Films 39
- 8mm Films 40
- Handmade Transparencies 41
- Heat Transfer Transparencies 42
- Diazo Transparencies 42
- Color Lift Transparencies 43

PHOTOGRAPHY ---- 45

35mm Camera ---- 45
4" x 5" View Camera ---- 46
2¼" x 2¼" Twin Lens Reflex Camera ---- 47
Movie Camera ---- 47

GRAPHICS IN THE CLASSROOM

Lettering Standards ---- 49
Drawing and Composition ---- 50
Perspective Drawing ---- 51
Graphic Process ---- 52

COLOR IN VISUALS ---- 54

DUPLICATING EQUIPMENT ---- 55

Spirit Duplicator ---- 55
Mimeograph ---- 56
Infrared Heat Copiers ---- 57
Dry Photo Copiers ---- 57
Electrostatic Copiers ---- 58

DRY MOUNT PRESS ---- 59

LAMINATION ---- 60

AUDIO EQUIPMENT

Record Player ---- 61
Magnetic Tape Recorder ---- 62
Educational Radio ---- 63

NEWER MEDIA

Television ---- 65
Video Tape Lesson ---- 66
Programmed Instruction ---- 68
Dial Access ---- 70
Computer-Based Instruction ---- 71

ELECTRICAL SAFETY ---- 73

SCHOOL PROJECTIONISTS' CLUBS ---- 74

To The Teachers

We must remember that one of our chief tasks is to increase the pupils' experience, and thus through experience broaden their concepts. One of the principal values of audiovisual materials is that they permit us to depart from verbal and printed symbolism, but at the same time to provide much wider real or vicarious experience for pupils. Considered in this light, audiovisual materials are great assets to teachers if they are carefully selected and properly used; that is, if they are appropriate to the curriculum and to the age and mental level of the pupils.

Teachers should base their selection of high quality materials upon valid teaching *purposes* and upon the unique characteristics of a specific group of learners.

Readiness is most important in using materials; therefore, utilization should be preceded by the development of adequate pupil readiness for effective participation.

Physical facilities and conditions for using materials should be arranged by the teacher in a manner which conserves time and provides for safety and optimum learning conditions.

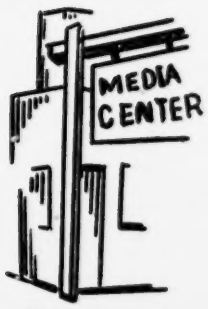
Pupil participation is the key to the derivation of potential values in instructional materials. The teacher should guide the pupil in the important processes of reacting to, and taking appropriate action as a result of, media experience situations.

Evaluation of materials and techniques should be a continual process for the teacher.

Our aim in using audiovisual materials is to utilize the right material in the right place, at the right time, to do the best job.

While this handbook cannot be comprehensive, it is hoped that it will encourage you, the classroom teacher, to use audiovisual materials more effectively.

Media Program



The media program is the organization for the utilization of all types of media for the improvement of instruction within a school system.

It should include provisions for: personnel and materials, media centers, acquisition and cataloging of materials, media production, distribution, maintenance, maximizing teacher use of the proper media for instruction, and for the evaluation of the program.

Briefly, a media center may be described as a facility staffed with professionally prepared personnel who have an understanding and workable knowledge of the vast quantity and variety of instructional equipment and materials now available. It is intended to house and disseminate instructional materials and equipment in support of the learning activities of the schools.

First and foremost it must be borne in mind that a media center owes its very reason for existence to the individual classrooms of the participating schools. All the instructional materials to be housed and circulated from the center are selected, procured, organized, and administered, maintained and disseminated for the one and the only purpose of supplanting and reinforcing the teacher's presentation of daily lesson material so that desired concepts may more readily be developed and retained.

What is needed to bring the media concept to fruition is: (1) a most serious commitment to education on the part of school boards, administrators, and teachers; (2) commitment couched in terms of providing the best educational experiences possible in the best way possible; (3) commitment to making the students "hungry" to learn, and satisfying the hunger with high-quality instructional materials. These are the conditions necessary for making learning exciting and effective and, consequently, making the media function on an integral and dependent part of a child's learning experience.

Purposes of a media center includes:

I. Loaning of instructional materials to faculty and/or students
   A. Print materials . . . books, pamphlets, journals
   B. Projected materials . . . films, slides, microforms
   C. Audio materials . . . tapes, records
   D. Realia . . . kits, models, artifacts
   E. An efficient system for retrieving these materials from storage

II. Providing equipment and space for the use of these materials
   A. Equipment to view projected materials
   B. Equipment to listen to audio materials
   C. Space for independent study of print and non-print materials
   D. Space for small group use of these materials
   E. Equipment to duplicate or reproduce selected materials

III. Producing instructional materials for faculty and/or students
   A. Projected materials . . . slides, transparencies, 8 and 16mm films
   B. Graphic materials . . . charts, graphs, display items
   C. Audio materials . . . tapes
   D. Television . . . videotapes
   E. Three-dimensional materials . . . models, mock-ups, kits

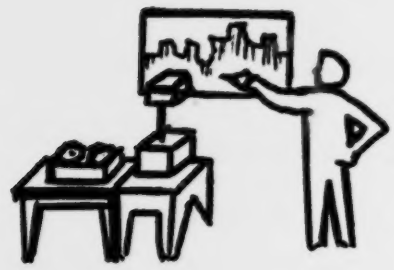
IV. Providing consultant and technical assistance
   A. Designing and implementing total instructional systems, including writing behavioral objectives, planning learning activities, producing materials, designing evaluation procedures, field testing and revising.
   B. Assisting in the design of and experimentation with elements of an instructional system including parts of a course, single topics, specific materials, items of hardware and space modifications.
   C. Technical assistance in the production of media including graphic artists, photographers, electronic specialists, distribution specialists.
   D. Assistance in utilizing software and hardware in selected areas of the teaching-learning process and environment.
   E. Assisting in the design of new buildings and the remodeling of existing facilities to promote the optimum use of instructional media.

Audiovisual and Newer Media

Good Practices

1. The director of the media program should report directly to the school superintendent.
2. A central distribution center should be instituted for more expensive and/or less often used machines and materials.
3. If feasible all other materials should be deposited in the buildings with a building coordinator to coordinate their use with the help of aides and/or technicians with professional supervision from the district center.
4. The director of the media program should approve orders for the acquisition of media supplies to be ordered through central purchasing.
5. All cataloging should be done at the central service center before distribution to buildings.
6. The central service center should keep an inventory of all materials.
7. Provision for regularly scheduled maintenance of hardware and materials should be made.
8. The media director as well as building media coordinators should spend time helping teachers integrate various media into their teaching.
9. In order for the media director to effectively administer the program he should possess minimum qualifications such as:
    1. A minimum of 15 semester hours of graduate level educational media courses including required courses in utilization, production, administration, plus elective courses in communication, programmed learning, educational TV and radio, photographic production and library science.
    2. A minimum of 15 semester hours of graduate level courses in fields of elementary and/or secondary curriculum development, and supervision of instruction, psychology of learning, administration, research methods, statistics, systems design, or computer programming.

Audiovisual Specialist



Typical Duties of the Audiovisual Specialist

A. Administrative. He should:

1. provide educational leadership in program development with optimum utilization of educational technology.
2. organize, supervise, and maintain an audiovisual Instructional Materials Center to serve both students and teachers.
3. work closely with individual teachers and teacher committees in the selection and evaluation of materials and equipment.
4. make reports to the school's administration concerning the operation, needs, and promotion of the non-print program.
5. determine the audiovisual material and equipment needs of the school.
6. maintain an accurate inventory of all audiovisual items.
7. locate, interpret, evaluate and report to different types of groups, research concerning educational media and instructional techniques; to work as a member of research teams; to organize pilot projects and secure maximum visibility; and to adapt research findings to practical school situations.
8. prepare the audiovisual budget and supervise all purchases against this budget.
9. assist in the recruitment of an efficient staff for the Center.
10. provide job opportunities in the audiovisual center for students to assist in local production, graphics, equipment use and repair, and secretarial help.
11. assist in the professional preparation of audiovisual specialists by providing opportunities for internships in cooperation with institutions of higher learning.

B. Supervisory. He should:

1. supervise the general operation of the audiovisual Instructional Materials Center.

2. be responsible for the in-service training of students and teachers in the use of various types of audiovisual materials and equipment.
3. supervise the production of locally produced instructional media.
4. supervise the audiovisual center staff so that it operates efficiently and effectively.
5. establish scheduling procedure for equipment and materials.

C. Advisory. He should:

1. assist in designing and planning learning situations.
2. assist in curriculum planning.
3. work with administrators and architects in the planning of new buildings and the remodeling of present facilities.
4. keep teachers continually aware of equipment and materials in the building and informed of new materials and equipment as they become available.

D. Technical. He should:

1. produce or supervise production of teaching materials that should be made locally.
2. train teachers in the operation of equipment.
3. write the specifications of equipment to be purchased.
4. determine the need for repair and maintenance of material and equipment.
5. supervise the production of various types of audiovisual media.
6. train and maintain an efficient staff of student projectionists to help with the program.
7. supervise the proper installation of the more permanent types of audiovisual equipment.

Selection and Evaluation of Audiovisual Equipment

Evaluation of any audiovisual equipment should include the judgements of those who are to use the equipment and should be group evaluations whenever possible. All evaluations accrue greater validity when they are based upon actual classroom use of the equipment.

Specifications relating to basic construction and safety features of specific types of equipment should be verified by trained maintenance personnel.

Evaluation procedures for audiovisual equipment should include appropriate criteria from the following list:

1. Demonstrations of competitive equipment under identical conditions.
2. Demonstrations of specific equipment under varying light and sound conditions.
3. Actual tryout of equipment for an extended period of time.
4. Application of directions given in the manual to determine clarity of directions, ease of operation, and simplicity of maintenance.
5. Continuous operation of equipment for a few hours to check temperature and any other critical operating characteristics.
6. Actual practice in cleaning, adjusting, dismantling, and reassembling equipment where professional maintenance is not required.

The following criteria for evaluation are more detailed and specific:

1. Is the equipment portable? Is it reasonably light in weight in comparison with others? Is it compact?
2. Is the equipment sturdy and attractive? Is it well constructed? Would it be easily damaged or broken? Are control features durable?
3. Is the equipment easy to operate? Are the controls accessible and clearly marked? Are there a minimum number of operating controls?
4. Does this equipment consistently meet desirable performance standards in terms of its specific function?
   - Is volume range adequate and well defined?
   - Is tonal quality true?
   - Is image sharply defined?
   - Is light supply adequate?
   - Is magnification of projection adequate?
   - Are sound and visual image synchronized?
5. Are adaptions easy to perform? Are adaptors included within the equipment or its container? Is the equipment compatible for use with other types of equipment?
6. Is the equipment easy to maintain and repair? Can minor adjustments be made simply and quickly when needed? Is it easy to remove parts likely to need repairs? Are the parts standard and easily available for replacement?

The following two criteria are of more concern to the administration than to the general evaluator:

1. Is the distributor dependable? Does he have proper credit rating? Are he and the manufacturer faithful to their agreements? Are repair and emergency service facilities readily available? Are adequate stocks of spare parts maintained locally?
2. In comparison with the cost of similar equipment, is the price reasonable?

Cataloging Audiovisual Materials

The rapid development of the use of audiovisual materials continues at an ever-increasing pace. Because of their variations in physical form and other complexities, a great deal of time and consideration is required merely to make decisions concerning their handling. In fact, the whole area has been moving so rapidly that we find ourselves making rules daily to fit the new problems, and practices have not had time to settle into accepted, uniform and recorded patterns.

The materials are prepared for two broad services: to provide services to the student directly, and to provide the teaching materials for the teachers to use with the students in the classroom.

Certain matters need to be decided in regard to audiovisual materials generally. Where will they be kept? Will they be assigned a subject number based on the classification scheme used by the library? Would it be easier to use an accession number with the items in each category thus arranged by order of receipt? Will the materials have catalog cards made for them?

Symbols are often made a part of the designated number. For example, "F" for films, "FS" for filmstrips, etc.

Films

The simplest arrangement of films is by accession number, the first received being perhaps, F1, the second F2, etc. The film and the can are marked with this number, and with the title and the names of the library. They are housed in specially made shelving, with separate compartments permitting each can to stand on its side in its slot. The slots are also numbered.

Some prefer to classify the films by the Dewey system. In which case, the succeeding steps would be the same as above.

Some media specialists have found color coding to be an effective means of cataloging the various types of media. Usually a different colored band or stripe is used at the top of the catalog card for easy identification, but cards of different colors may also be used.

In either case, the films may be cataloged and filed in the main library catalog or in a separate catalog. The information on the cards includes title, producer, date, size, color or black-and-white notation, number of reels or footage, running time, and brief annotation.

Filmstrips and Slides

The treatment of filmstrips is similar to that for films. An accession number (e.g., FS1, FS2) is assigned and is used on shelf markings, cans, and cards. Or a subject classification may be assigned such as FS629.2 for automobiles.

Catalog cards may be prepared for each filmstrip and filed in the catalog. Such cards, which show a distinctive colored border or are stamped "Filmstrip," should include location symbol, title of the filmstrip (main entry) and additional information: manufacturer, date, series, and record of accompanying scripts, recordings, or other aids. The number of frames and whether they are in color or black-and-white is included. Added cards are made for subjects; tracings are indicated on the title card. A shelf-list card is filed in a separate section of the shelf list.

As with films, a separate file may be used instead of general card catalog.

Slides are treated the same way as are films and filmstrips, except that the symbol "S" is used. Slides are cataloged as sets, and the main entry used is the subject rather than the title. Slides may be classified by broad classification. Each slide must be marked with its location symbol and with the name of the library.

Recordings

Recordings include records, tapes, and wires. They are the most complex to process of any material. The majority of centers tend to choose one of three arrangements: (1) Accession number, (2) Author or composer, (3) Subject. The symbol R preceding number to identify records, and T for tapes may be used.

Musical recordings are most often cataloged by composer, with added entries for subject (musical form), performer, instrument, arranger, and title. Separate cataloging is done for each work on a record or in an album. If the works are by many composers, the main entry is under the title. Information on the card included composer, arranger, performers, manufacturer's name, record number, number of sides, size, speed, and the title of recordings on reverse side.

Nonmusical records are cataloged under author. If there is no author or there are many, the title is used.

The cards may be filed in the main catalog, or a small separate catalog kept handy to the record collection. Records have call

numbers and name of library lettered on the seal, and on the sleeve, album or holder.

Tape recordings may be handled in much the same manner as are records. The assigned numbers and the library's name are lettered on the seal of the spool and on the container.

Periodically, lists of available films, filmstrips, records, and other materials should be prepared for distribution.

Educational Boards In Visual Displays

CHALKBOARDS

The chalkboard has played an important role in the classroom for many years. No doubt it will continue to be a valuable medium; but other media such as the opaque projector, overhead projector, and slide projector have taken over many of its functions, with certain practical advantages.

PURPOSES:

To provide writing surface easily erased.
To facilitate group and individual instruction.
To provide a means for emergency visuals when materials have not been pre-prepared.

GOOD PRACTICES:

Choose light-colored (not black) chalkboards. Green is recommended.
Choose steel-backed chalkboards for one or more panels to permit use with magnets to hold items for display.
Arrange chalkboards to avoid glare from windows or other light sources.
Materials should be put on chalkboards before class if feasible.
All materials should be on eye level of pupils.
Erase or cover materials not being used.
Add variety and contrast.
Keep surface in good condition and clean.
Keep erasers and trays free from dust.
The chalkboard is for chalk visuals. Other material should be avoided, such as paste-ups.
Prepare stencils when maps, diagrams, and other charts are used repeatedly.
Use grid method, opaque projector, or templates in transferring difficult diagrams, charts, or maps to chalkboard.
Stand to one side so as not to obstruct vision.

BULLETIN BOARDS

The bulletin board, as the name suggests, should be a place for the posting of bulletins. The bulletin board may also serve functions other than for news and information; it serves as a place for displaying pupils' work and as a visual aid to learning. Each classroom should have a bulletin board in addition to other boards.

PURPOSES:

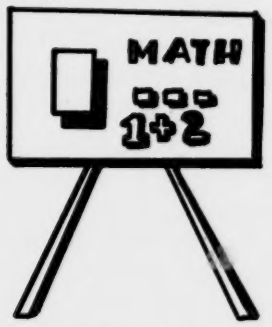
Provide a place to display pertinent clippings, news pictures, and announcements.
Provide a place to display work done by pupils.
Provide a place to introduce or summarize a unit of work.
Provide motivation through questions, problems, and specimens.
Provide for development of pupil initiative and creative ability.

GOOD PRACTICES:

Location and lighting of bulletin boards are important in the classroom or hall, and should be well chosen when an architect is planning the facilities.
Keep the bulletin board neat and attractive.
Materials on the bulletin board should be changed frequently. Some displays are valuable for a day, others for two days, a week or perhaps longer.
Encourage pupil participation in arranging displays.
Displays should not have crowded materials.
Balance and color should be considered when planning a display.
The purpose of a display should be definable and of educational value.
Legibility is most important in all visual displays; size of the letters, symbols, and pictures should be chosen according to maximum distance from viewers. The height of the display should be determined by the eye level of the intended viewers.

Materials should be accurate and appropriate to the ages, abilities and needs of the pupils.
Arrangement is important in preparing a visual display. The eye is attracted to:

1. The spot with the most contrast.
2. The spot which is larger.
3. The spot which is most irregular.
4. The spot which is nearest the margin.
5. A line moving from left to right.
6. Warm colors (reds, browns, and their combinations) which tend to attract more attention than cool colors (blues and greens).



FLANNEL BOARDS OR FELTBOARDS

Choose a convenient sized board covered with flannel or felt to which cutouts from the same materials are made. These cutouts will adhere to the covered board. The felt or flannel material may also be permanently attached to the back side of light weight objects and used on the covered board.

PURPOSES:

To save teacher's time during class presentation by use of pre-prepared materials.
To visualize sequences in story telling, mathematics or other subject matter.
To teach arrangement, composition, and the elements of design.
To motivate through pupil participation with cutouts, symbols, and other pictorial devices.

GOOD PRACTICES:

Boards should be portable.
Boards should be covered with neutral color.
Symbols should be made from attractive colors.
Sand paper may be adhered to the back of pictures to make them adhere to the board covering.

Use color arrangement imaginatively but avoid crowding too much material.
Use legible lettering and symbols.

HOOK-AND-LOOP BOARDS

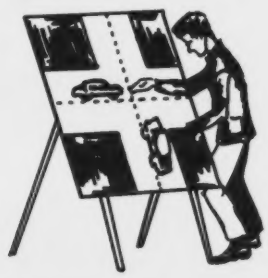
The hook-and-loop materials are relatively new in the field of educational media. The nylon looped material is easily applied to the board surface. The nylon is available in various colors and teams with quick applying nylon hooked tape which is easily applied to most surfaces. These materials safeguard against slippage, curling and falling without relying on unpredictable friction, flocking or heavy magnets. These inter-locking materials have almost unbelievable strength which permits the displaying of heavier objects such as books and equipment.

PURPOSE:

The purpose of the hook-and-loop board is the same as that of the felt or flannel board. The advantage is in the greater strength of the materials, which provides potential for displaying heavier objects.

GOOD PRACTICES:

Good practices for these materials are generally the same as that of the other materials.
The looped materials come in a variety of colors which add attractiveness to displays.
Three-dimensional letters and symbols are easily used and very effective.



MAGNETIC BOARDS

The magnetic board is constructed by placing a sheet of metal

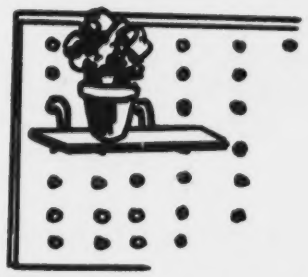
behind a suitable surface. Magnets may be attached to letters, words, phrases, sentences, symbols, and objects to be placed on the board. Sheets of paper or other light weight materials may be displayed on the board by using magnets to secure them.

PURPOSES:

To provide another effective method for displaying pre-prepared materials.
To provide an easy method for displaying maps, charts, graphs, or other materials prepared on paper or cloth.

GOOD PRACTICES:

Have magnets readily available for use.
Prepare materials, to which magnets are to be attached, well in advance.
Three-dimensional materials add effectiveness to many types of magnetic visuals.



PEGBOARD DISPLAYS

The pegboard is a type of display board which consists of sheets of masonite (hard-surfaced pressed wood). Holes have been drilled at one-inch intervals across the surface. You cannot staple or pin materials directly to the board. Rather, you use tapered pegs or a variety of metal fixtures that can be inserted in the holes to hold posters, pictures, and a wide range of three-dimensional objects like books, tools, jars, and specimens. Light weight materials can be taped to the board surface.

The pegboard is available at most lumber yards and many department stores. It is available with one or both sides hard surfaced.

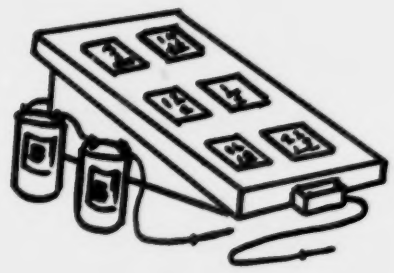
The pegboard can be wall mounted or made into easels or free standing screens to serve as display areas.

PURPOSES:

To provide another effective method of displaying materials and equipment.
To provide an effective method of displaying small tools and other three-dimensional objects which may be too heavy for other display boards.

GOOD PRACTICES:

Wire may be used to attach objects which should not be handled or removed from the display.
Pegboard screens may be used to provide privacy for small groups or committee work.
Pegboard shelves provide an excellent means of displaying books and other objects.
Materials should not be crowded on the pegboard, nor should they be grouped off-center so as to endanger the balance and suspension of the board.
A good supply of various kinds of pegs and hardware for use on the pegboard should be readily available to the classroom teacher.



ELECTRIC BOARDS

This can be used as an educational game and is called many different names, some of which are: electric board, circuit board, electric game and quiz game.

To make this game you will need a large, flat cardboard box, at least three inches deep; a paper fastener for each question and answer placed on the box; a dry cell battery; a lamp socket and a small bulb; and about twenty feet of covered wire for ten questions and ten answers. This could be made any size to suit your needs, of course the more questions and answers, the larger the box should be and more paper brads and wire will be needed.

Prepare ten questions and ten answers, these could be questions on most any subject matter. The first question might be written and fastened next to the top brad in the first row. The answer to the first question would be fastened at the opposite end of the above wire. When the circuit is complete, the lamp lights and you have a correct answer.

PURPOSE:

The individual learns something about electricity, including what a complete circuit is.
The bulb will light up when you have a correct answer.

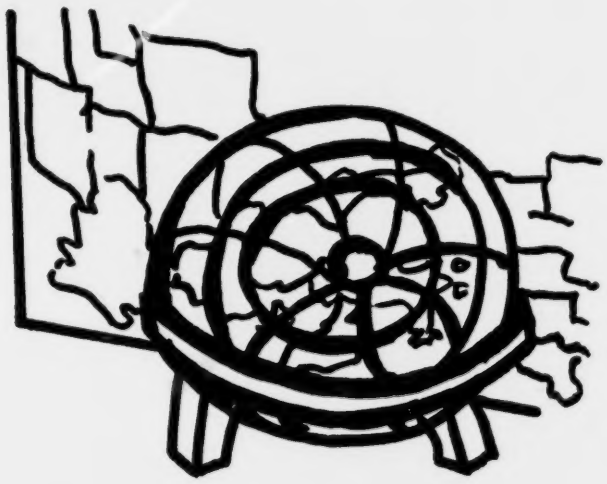
The board can be easily adapted to any subject matter.
It can be used for review purposes.
It is very economical and easy to make.
It creates interest for the child that might not otherwise participate.

GOOD PRACTICES:

Be certain that questions and answers are placed on the same wire.

Make small pockets and fasten to the board then place questions and answers in the pocket. This allows you to change questions and answers more easily.
Allow students to make up questions and answers for the game.
Making one of these could be a science experiment for a student.
The electric board can provide a fun way of learning.

Non-Projected Materials



MAPS AND GLOBES

MAPS are a representation (usually flat) of a geographical surface.

GLOBES are spherical models of the earth. The four properties of a globe's surface are: area, distance, direction, and shape.

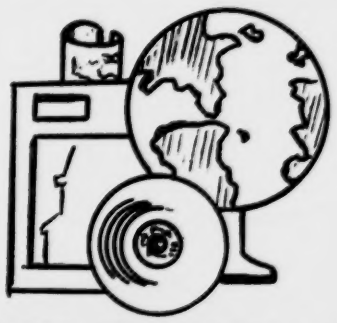
Maps and globes are available in three principal types: physical, political and special purpose.

PURPOSES:

To locate cities, counties, rivers, mountains, countries, and showing boundaries.
To determine distances, shapes, and sizes.
As a planetarium to show relative distances of celestial bodies and/or to show seasonal changes.

GOOD PRACTICES:

Should be attractive in appearance.
Should be large enough to be seen easily.
Should have a coating to protect it from wear.
Should be authentic.



CHARTS, DIAGRAMS, FLAT PICTURES, GRAPHS, AND POSTERS

CHARTS are combinations of pictorial, graphic, numerical or verbal materials which together will be most likely to present clear visual summaries of important processes or relationships. There are many types of charts, but the most commonly used in teaching are tree and stream charts, flow charts, outline charts, and tabular charts.

DIAGRAMS are line drawings of an explanatory nature which may incorporate the characteristics of charts, graphs or maps.

FLAT PICTURES have long been used in the instructional program. The value of a picture in the classroom may depend on its artistic characteristics and/or other factors which contribute to an educational concept. The following critteria are suggested as a partial guide for selecting pictures for the classroom use: artistic quality, truthfulness, interest,, clarity, effective color, size and suitability for teaching purposes. Flat pictures should occupy a portion of the wall in every school.

GRAPHS are visual representations of numerical data. They reveal important relationships in data, such as trends and variations from normal.

POSTERS are visuals, a combination of bold design, color and message.

These materials may be presented or displayed in a large format for class study or they may be presented in smaller format for individual study.

PURPOSES:

To show interrelationships, general outlines; key features of a process, object or area.

To reveal information and clarify certain concepts.

To present clear visual summaries of important processes or relationships.

A graph is intended to tell a story at a glance, to present comparisons, trends and relationships.

Motivates and stimulates interest.

Develops understanding and appreciation for certain concepts, current events or holidays.
Promotes individual study and improves retention.

GOOD PRACTICES:

Material should be as concise as possible without suffering from insufficient information.
Avoid crowding, observe the principles of simplicity.
Use a good background color and colors that blend well, materials should be attractive with eye appeal.
Select materials that illustrate the concept being taught.
Use pictures to establish an appropriate atmosphere.
Make use of opaque projector for group study of pictures.
Picture sets may be placed in manila envelopes or cardboard boxes.
In processing picture sets, provide on each envelope or box the call number, title, name of distribution center, and total number of separate pictures in set; and place on each separate picture the call number and the number of each picture in set.

THREE-DIMENSIONAL NON-PROJECTED MATERIALS

MOCKUP—A representation of the real thing constructed so as to emphasize a particular part or function of the real thing. It may be smaller or larger than the original.
MODEL—A scale replica or representation of reality. The scale may be miniature, exact size, or an enlargement, and the model itself may or may not be manipulative.
SPECIMEN—A part of one of a number, intended to show the kind or quality of the whole. A sample.
REALIA—Real and natural objects both animate and inanimate.
DIORAMA—A model or an actual setting or scene is a diorama. Dioramas are usually combined realia or models and some form of artificial surroundings.
These are objects, materials, or representations which can be exhibited in the classroom to show size, color, physical features,

or relationships. They may be so designed that parts are movable or removable to show structure or operation.

PURPOSES:

To show or represent real things removed from their natural settings.
To show how things are constructed and how they function.
To provide tangibility to concepts in which the time factor requires projection into the past or into the future.
To add reality to classroom learning.

GOOD PRACTICES:

Try to arrange displays to stimulate interest and arouse curiosity.
Secure models when it is not feasible to bring real objects into the classroom.
Models should be built to scale and not too complicated for the maturity of the group.
Explain that any model or mockup may be incomplete, and usually out of its natural setting.

Tearsheets

Tearsheets are so-called simply because they are usually obtained by the method of tearing them from various publications, periodicals and newspapers. There are other materials which will perhaps fall into this category even though they are not truly tearsheets; such as maps, posters, and lithograph prints.

PURPOSES:

Tearsheets provide up-to-date materials for the classroom.
Tearsheets help to clarify the concept being presented.
Tearsheets provide motivational influence for pupils.
Tearsheets provide valuable materials for display boards.
Tearsheets are invaluable in Education Television teaching.

GOOD PRACTICES:

Two copies are needed if both sides of a sheet are to be displayed.
Tearsheets must be properly filed. Often this is done by units or seasons.
Tearsheets are good materials to use with the opaque projector.
Tearsheets may be laminated for longer wear.
Pictures printed on clay based paper may be lifted off the paper to make transparencies for use on the overhead projector.
Transparencies may be made from black and white tearsheets by using an infra red copy machine.
Tearsheets are often mounted on cardboard for easier storage and more effective utilization.

Field Trips

Field trips are included as educational media because they provide a source of information and help to develop understanding that can not be gained through other types of instruction. Students find field trips bring them into close, meaningful observation of many natural and man-made items. Impressed by the first hand observations they see, students find that they are able to understand the organization and the procedure necessary to fulfill the requirements of certain fields of endeavor.

A "yellow-page" type of community survey will reveal many business and industrial field trip possibilities. Field trips involving nature may be planned by contacting local park departments, state and federal park, fish, game and forestry type agencies.

PURPOSE:

To provide first hand information and impressions about some specific area of learning.
To provide a better understanding of the community in which the child lives.
To provide a basis for vocational selection.
To provide an understanding and appreciation of the local economy.

GOOD PRACTICES:

An up-to-date listing of all available and worthwhile field trips should be provided each teacher. Permission to visit private enterprises should be obtained from those in charge. Lists should indicate the appropriate individual to contact to schedule a visit.
Parental permits should be obtained in writing before each excursion away from school.
It is wise to stay close to home on nature trips unless students are very limited in number and willing and able to render necessary first aid to themselves.

Any provisions which involve travel, food, and housing should be made well in advance of the actual trip.
Each excursion should be evaluated as to its appropriateness and these evaluations should be considered before specific excursions are included in future listings.

Ten Pointers for Field Trips

1. Everyone should know why the trip is being taken.
2. Follow school regulations and regulations of the visited organizations.
3. Notify the school and the facility to be visited of date, time, number of students, and what you would like the students to see.
4. Prepare a check list of important points each student should look for on the trip.
5. The instructor should know the trip before making it with the students.
6. Solve all transportation, eating, and lodging problems before taking the trip.
7. If possible, divide students into groups of ten or less per guide.
8. Notify students of arrival and departure times and demand promptness.
9. Evaluate the trip by discussing and reviewing and testing students.
10. File all essential and interesting trip material for future reference.

Projectors and Screens

THE OPAQUE PROJECTOR

Sometimes referred to as the "elephant of the audiovisual jungle," the opaque projector is often one of the most useful but, sadly unused visual tools. The machine itself is made up of a high intensity lamp, usually a 1,000-watt incandescent, shining directly on a flat opaque picture or object. The light reflects from the picture into a reversing mirror, then through the lens system to the screen.

Operation is simple—insert the material, switch the machine on, focus, elevate if necessary, and teach!

PURPOSE:

The opaque projector enjoys the unique purpose of projecting thin objects and images from non-transparent materials. No special preparation is needed — printed, drawn, or photographed matter may be used. The cost of materials is insignificant. Even small pictures clipped from newspapers or magazines can be enlarged so a large group can view them at one time.

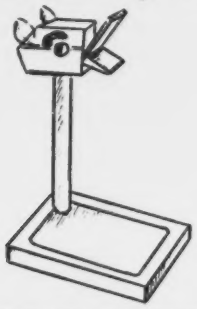
GOOD PRACTICES:

Projected items must be inserted with top of picture toward back of projector.

If the machine is equipped with a roller-type platen, the pictures may be inserted at the side and merely "cranked" into center of the projection stage.

Most pictures, especially small ones, should be mounted to prevent curling. Mounting may be done onto almost any firm material such as card stock, construction paper, or

even cardboard. The size of the mounting should be near 10 x 10 inches, the size of the projection stage.
Glue not affected by lamp heat should be used for mounting. Recommended is liquid "white glue." Least satisfactory are rubber, wax, shellac, and thermoplastic base adhesives. A cover sheet of annealed plate glass makes almost any adhesive satisfactory, however.
Pictures should be adhered completely to the mount, not merely spot glued. Otherwise, bubbling may occur when the air expands and the paper dries.
Pictures in a series may be glued to shelving paper or "butcher paper" and cranked through the machine, thus giving an effective sequential projection. "Paper movies" may be prepared by this means.
To obtain a good image on the screen, the opaque projector should be used in a rather dark room.
English compositions may be projected for the whole class to evaluate.
Maps, diagrams, and pictures may be enlarged with the opaque projector for drawing on the bulletin board or chalkboard.
Many three-dimensional objects can also be projected.



OVERHEAD PROJECTOR

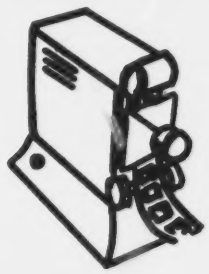
The development of the overhead projector made possible a most effective method of communicating visually with class groups. By projecting the transparent material onto a screen behind the speaker, eye contact may be maintained with the audience. Overhead projectors have been termed "the greatest invention since the chalkboard."

PURPOSE:

To illustrate a lecture or other class presentation.
To maintain the attention of the audience.
To clarify points of the discussion.
To present pre-prepared tests or directions.

GOOD PRACTICES:

Always face the class when using the overhead projector.
When using lettering be sure that it will be large enough for all to see and read easily.
Use water-base ink or grease pencil to write on the transparency.
If a transparency is worth using, it is worth the time to prepare it neatly and attractively.



FILMSTRIP PROJECTOR
35mm

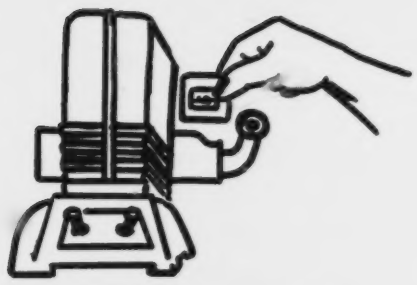
The 35mm filmstrip projector is available in a variety of types with differentiated capabilities. Some types are for individual viewing while others are for group use. Most projectors use the loose filmstrip while others are equipped with cartridges. Many models are equipped with slide carriers, which provides the capability of projecting 2″ x 2″ slides. Other types have sound potential either by tape or disc recordings to supplement the visuals.

PURPOSES:

The purpose of the filmstrip machine is to project a series of still visuals in a planned sequence.
The visuals may be presented as desired, giving ample time for verbalization.
The lamp should be adequate for the size group to be served.
The cooling system should be capable of controlling temperature.

GOOD PRACTICES:

Have extra lamp readily available.
Be certain lens are clean before threading machine.
Focus lens and thread film before the session starts.
Precheck and set volume control on combination sound project.



SLIDE PROJECTOR

Slide projectors are available in a variety of types differentiated by both the sizes of slides they will project and the situations in which they will be used. Thus, there are 2-by-2-inch, 2-by-2-inch super, 2¼-by-2¼-inch, and 3¼-by-4-inch slides.

Projectors for classroom use of 2-by-2-inch or 2-by-2-inch super slides are small, light in weight, and very easily operated; in some the slides may be changed manually, in others automatic or remote-controlled operation is provided.

Perhaps no other improvement in equipment has stimulated use of 2-by-2-inch slides as much as the development of cartridge projectors. In these machines the cartridge not only contains the slides in proper order and orientation for projection, but also provides a convenient storage system for slide sets.

Some machines are manually operated; the cartridge is fitted into its carrier, and a sliding arm, pushed in and pulled out, is the sole action required to change slides.

Automatic remotely operated slide projectors have increased in popularity because of the number of features they provide. They may be operated from the front of a room by a push button on an extension cord. In some machines, only slide changing is provided; in others, slides may be run in normal sequence or may be repeated (since the remote control includes a "forward/backward" control). Further, some machines permit the operator to adjust the focus of the projected picture by means of a remote control feature. A built-in timer is included in some models to change slides automatically at predetermined intervals. Most remote control machines can be adapted to receive a single pulse from a special tape recorder for synchronized sound-slide presentation.

The latest in slide projection is the compact, transistorized sound-on-slide system which lets you put voice, music or any sound right on conventional 2-by-2-inch slides. Each slide can contain up to 35 seconds of sound. Slides may be updated at any time by adding new ideas, deleting what's obsolete just by recording over the old sound on each slide.

The lantern-slide (3¼-by-4-inch) projector is set up and operated in a manner similar to the 2-by-2-inch slide projector.

PURPOSE:

To project colorful, realistic reproductions of original subjects.

To update and revise subjects.

To create visual stimuli.

To learn visual identifications.

To add "punch" to meetings by projecting photography of special events.

GOOD PRACTICES:

Keep projector lenses and slides clean.

Keep slide sets in order and in appropriate container.

Keep fingers off the projection area of slides; hold by the corners only.

Number slides in sequence, and use thumb marks.

Maintain slides in order and protective boxes.

Well-prepared slide sets have thumb marks to guide slide insertion. Stack the slides, head down, thumb mark at the top right, ready to grasp and insert.

The procedure for inserting slides (if "thumb mark" is not present) in the carrier is, in principle, the same as for projecting any visuals with any machine operated from the rear of the room.

As you face the screen from a position behind the projector hold the slide so it reads normally.

Rotate the slide to the left or right until it points head down; then insert it in the slide carrier.

Push the slide changer to carry the slide into the machine, exposing the empty holder on the opposite side.

Insert the second slide.

Remove the first slide, and insert the third. Repeat the procedure through the entire set.

MOTION PICTURE PROJECTOR

The 16mm motion picture projector has been widely used for classroom instruction for several years, however, the 8mm projector has made considerable inroad in recent years. The 35mm equipment is seldom used other than for large group situations such as auditoriums.

PURPOSES:

The purpose of the equipment is to project film in a manner most conducive to learning. The following features are important in projection, selection, and utilization:

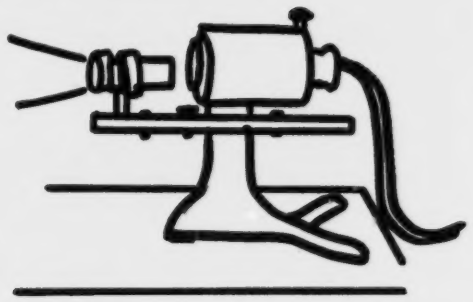
a. The projector should operate smoothly and quietly.
b. The threading process should be clear and simple.
c. The image on the screen should be steady and without distracting flicker.
d. The projector should have a reverse switch.
e. The projector should provide both silent and sound speed.
f. The amplifier should be adequate for large group situations.
g. The projector should provide for still pictures.
h. The fan should be adequate to cool lamp.
i. The above features do not all hold true for cartridge type projectors.

GOOD PRACTICES:

Before the session starts, test and set volume control and focus lens.

Have fuses and extra lamps readily available.

Be certain lens are clean before threading projector.



MICROPROJECTOR

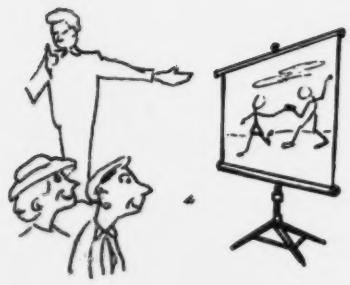
The microprojector is a device which couples the techniques of projection with the microscope and actually saves time and permits greater latitude in the classroom than the microscope method. Primarily, the microscope is an individual research instrument, but the microprojector is a group instruction instrument. You can point to a specific detail of the specimen under observation, being certain of correct observation by each member of the group. However, the degree of high magnification attainable with a microscope cannot be achieved with a microprojector.

PURPOSE:

Microprojection should be used to introduce students to the world of microscopic wonders.
Microprojection at the elementary school level should be studied for form and structure rather than for specific details.

GOOD PRACTICES:

Never use greater magnification than is necessary to show the specimen.
First project under the lowest power available on your particular projector — this will give you an over-all view of the specimen being studied. Then, increase magnification one step at a time to allow for greater definition and more detailed study of the component parts of the specimen under observation.
The room should be dark if projection is to a regular screen.
The room should be semi-dark if projection is on a white sheet of paper on a table top.
The distance from the projector should be limited to ten feet.



SCREENS

Proper projection depends greatly on the projection screen. Screens come with many different surfaces; namely:

Matte — Gives widest viewing angle, poor reflection ability but is best for close seating arrangement.

Beaded — Greater reflective power, less viewing angle. Brightness drops rapidly.

Silver Screen — Well suited for color. Viewing angle and brightness less than beaded screen.

Lenticular — Best but more expensive. Gives good viewing angle, good color quality, high reflective quality.

Rear Projection — Best for lighted rooms. Made of ground glass or plastic.

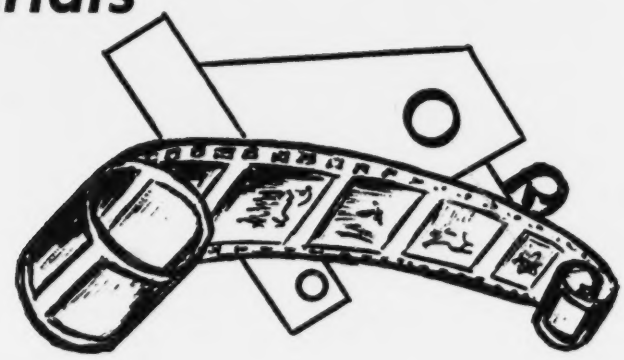
PURPOSE:

To present the best image.
Adaptable to situation.
Ease in preparation for showing.

GOOD PRACTICES:

Use screen to fit situation.
Have screens available for instant use.
Careful handling as most screens are easily damaged.
Care should be taken to keep screen clean.
Screen should be placed at a 90° angle from the projector.

Projected Materials



FILMSTRIPS

A filmstrip is a related series of still transparent pictures in logical sequential order. The pictures are on 35mm film with from 10 to 100 pictures per strip with the usual range from 20-50. Titles or captions usually either alternate frames with pictures or appear superimposed on the pictures themselves. Often they contain built-in participation devices such as discussion questions. Filmstrips may be projected on a screen or viewed through individual viewing devices. Sound to accompany filmstrips may be on records, on tapes, or in a few instances, on the filmstrip itself.

PURPOSE:

Filmstrips may be used to present factual information in both pictorial and verbal form.

They are effective for teaching skills because they may be repeated as many times as necessary at any speed until the skill is learned.

Effective use may be made of filmstrips for teaching the reading of symbols on maps, charts, and by showing the relationship between symbols and pictures of what the symbols stand for.

Filmstrips may be used to introduce pupils to a subject and thus stimulate their interest in further study.

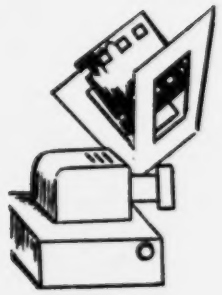
Aesthetic appreciation may be stimulated by the filmstrip through the use of excellent photography and the reproduction of works of art.

Filmstrips may be used for an overall review of topics which have already been studied.

Students may use filmstrips in their individual preparation for class.

GOOD PRACTICES:

Filmstrips should be previewed before use.
Teachers should study associated materials such as records or guides.
Equipment should be prepared before class begins.
Students should be prepared for viewing the film.
Seating in the classroom should provide for a clear view of the screen by all of the pupils.
The room should be sufficiently darkened and should have adequate ventilation.
The reading of captions by pupils may offer opportunity for members of the class to practice oral reading and speaking.
Filmstrips offer opportunity for class discussion at any point.
Only a few frames of a filmstrip may be necessary for one lesson. Do not show the whole strip unless it will contribute to the achievement of stated objectives.
Evaluation should follow the use of any filmstrip.
Automatic sound filmstrips have a sound or light ray which will advance the filmstrip automatically when used on a projector designed for this purpose.
Building libraries of filmstrips are recommended since the greater availability and conveniences of these materials will encourage their use.
Many schools have found that by providing individual viewers to students encourages the use of filmstrips in the classroom.



SLIDES

A slide is a relatively small piece of film or other transparent material on which a single pictorial or graphic image has been placed. A slide series consists of transparencies, usually in color, all mounted in square frames, usually 2" x 2". The first slides to achieve wide acceptance in teaching were 3¼" x 4" glass mounted slides. However, with advances in photographic techniques, the less expensive and more convenient 2" x 2" slides came into general use. Also, excellent color quality becomes possible at low cost.

PURPOSE:

A slide series may convey information, teach a skill, clarify an idea, or affect an attitude through individual study, group viewing, or television use.
Introduction of a unit (stimulate interest).
Developmental lesson (show cause and effect).
Travel lesson (show modes of travel and routes).
Appreciation lesson (provide background of topic).
Drill lesson (furnish new approach to drills).
Group discussion (provoke comments).

GOOD PRACTICES:

Can be tailored to fit individual or specific needs.
Can be shown in any desired sequence.
Can be bought commercially or produced locally.
Can be revised or replaced often and economically.
Can be combined with taped narration for greater effectiveness.
May increase usefulness with magazine storage of slides and automatic projection.
Slides should be stored in transparent sleeves or panels so that they can be previewed quickly and easily.

16mm FILMS

The motion picture is an integral part of any media system and a teaching medium that can gain student participation and involvement when many other teaching materials fail. This is due to the multi-facet, sensory communication inherent in a good film.

The motion picture can be defined as a rapid sequence of pictures projected on a screen to create an optical illusion of motion. The unlimited potential of the motion picture as an instructional medium places it in a special category among the great variety and classes of instructional materials.

The moving picture can communicate through sound and sight simultaneously. It blends sounds, pictures, motion, and color in such a manner as to impress and gain retention in the students' mind. It can involve students in participation experiences.

PURPOSE:

Motivates —Arouses latent interest.
Re-creates the past.
Demonstrates the complex.
Condenses information.
Plans subject development.
Provides whole class involvement.
Speeds up or slows down natural processes.

GOOD PRACTICES:

Incidental use of films to take up time should be avoided.
Teacher should work out for himself how best to use the film to fit his particular learning situation.

THE TEACHER SHOULD:

Read film reviews.
Preview the film.
Study the film's teaching guide.
Prepare the class for viewing film.
Allow review and class discussion following viewing.

Possess the necessary skills and techniques to successfully operate equipment.
Have environmental control to insure pupil comfort and clear viewing.
Lead the discussion to further investigation.
Allow review and class discussion following viewing.

Because of the wealth of subjects treated by the more than 17,000 titles of educational films available, the 16mm film will be on the high priority list of materials of any media center. To help circulate these films from the media center, complete listing and speedy service to the teachers are necessary. When the class is ready the film should be presented; next week will be too late.

Film reviews and teaching guides should be available for each film. Content specialist may make invaluable contributions to busy teachers in the classroom by recommending and orally reviewing with teaching suggestions, the use of any film in the subject areas; to achieve desired concepts or to challenge.

8mm FILMS

The 8mm film has long been used for home movies, but has only recently become a vital medium for classroom use. Probably the invention of the 8mm cassette projector was the breakthrough that brought this material into wide instructional use.

PURPOSE:

To provide a medium for the moving image which is relatively inexpensive and easy to use.
To make the moving images accessible to both teacher and student.
To concentrate upon a single concept.

GOOD PRACTICES:

All projectors and film should be of the same format, either regular 8 or super 8.
Cassettes of 8mm film should be made available to students the same as books and other media.
Cameras and empty cassettes should be available for the

production of films of local interest.
The Super 8mm film gives a larger picture and should be considered when purchases are made.

HAND MADE TRANSPARENCIES

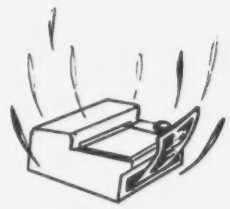
The hand made visual produced directly on transparent film, or clear acetate, to be projected is a relatively simple and inexpensive kind of transparency. A grease pencil, china marker, or felt tip pen can be used to write or draw on the base material.

PURPOSE:

This process produces an on-the-spot transparency which can at any time, be changed to suit the individual or the lesson at hand.
It also provides a means of inexpensive transparencies and reduces the delay of ordering and purchasing commercial units.

GOOD PRACTICES:

Finer lines can be produced by the means of grease pencils especially produced for this purpose.
Felt tip markers and pens can be used to add brilliant colors to your visual. For ease of erasing, use only water based inks.
Colors can be added by utilizing tinted dry transfer colors produced for this purpose.
Lettering can be added by dry transfer lettering, hand lettering, or by the use of lettering guides.



HEAT TRANSFER TRANSPARENCIES

"Thermal-copy," "dry heat," or "heat-transfer" are various names describing this process. This is a one step process making it possible to produce a finished transparency from almost any black and white original in a matter of seconds. This method utilizes the office copy machine known as "thermal" machines.

PURPOSE:

Production: in a few seconds a transparency is ready for projection; thus having immediacy-potential.

A means of producing low cost "filmsy" transparencies, production of transparencies from almost any black-line original.

GOOD PRACTICES:

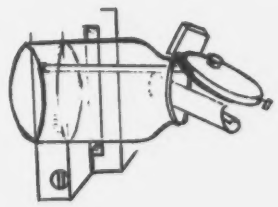
Colored "heat-transfer" films are available for production of color transparencies.

Colors can be added the same as on hand made transparencies.

Self adhesive color films can be used to add color or a tinted background.

Pencil or india ink drawings will produce very sharp transparencies through this method.

This process will only copy material that is printed with either carbon or metallic based inks.



DIAZO TRANSPARENCIES

The "diazo" materials are becoming more readily available and they provide an excellent source of hand made and individually

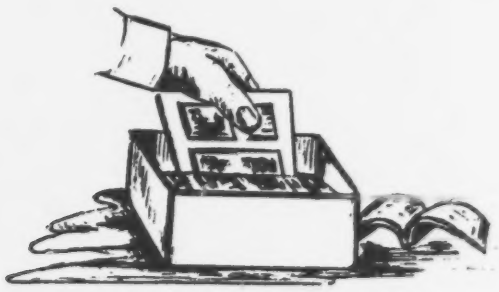
designed color transparencies. The film is available in most colors thus providing a means for multi-colored transparencies. Although being a more sophisticated process than the heat-transfer process, the equipment and materials required for production are basically simple. Diazo film consists of a base of clear plastic, coated with a special chemical that when exposed to the fumes of ammonium hydroxide will produce a color dye.

PURPOSE:

The purpose of the diazo transparency is the same as any transparency but at the same time provides permanent color which will neither fade nor smear. Diazo also provides a colored background to any single color transparency whether it be hand made or commercial.

GOOD PRACTICES:

The use of a fine translucent master will produce a sharper image.
Using an image that is as opaque as possible assures clear transparencies.
Using india ink as much as possible will give better results although ball point pens and pencils will work sufficiently.
The use of dry transfer lettering, Leroy process, or the Wrico type lettering gives the transparency that professional look.



COLOR LIFT TRANSPARENCIES

Many magazines contain excellent multi-color pictures, maps, and illustrations that are very suitable for classroom use as transparencies. The color lift method makes available a great wealth of transparency ideas. The heat and pressure required for this process can be obtained through the use of a dry mount press, most "thermal" copy machines, or laminating machines. The magazine used must be printed on clay coated paper. (Example: Life, Look, National Geographical, etc.)

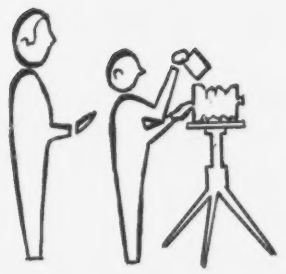
PURPOSE:

Produces a near-perfect transparency simply by transferring the ink from a magazine page to a sheet of transparent film.

GOOD PRACTICES:

Select bright pictures with sharp contrasts.
Select those pictures that need to be enlarged and viewed by the entire class at one time.
Keep the inked surface of the page to be lifted as clean as possible. Dust, oil, or lint will spoil a lift by preventing the ink from adhering to the film.
Select pictures that are printed on a clay coated paper. To test for the clay coat, wet finger and gently rub the surface on the picture; a white substance will appear if there is a clay coat.

Photography



Photography has been used for many years in school systems to promote good public relations through school publications and local newspapers. The use of photography in the production of classroom materials, however, is rather new to most school systems.

PURPOSE:

The purpose of photography is to provide high quality visual material for instructional purposes.

GOOD PRACTICES:

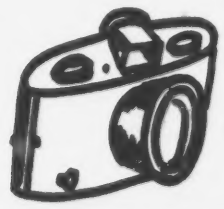
Good practices for this medium requires an adequately equipped darkroom and at least the following cameras: 35mm single lens reflex, 4 x 5 view camera, 2¼ x 2¼ twin lens reflex, and movie camera.

Photographs of school activities should be made available to the local newspaper.

The photographic department is an ideal training center for student yearbook staff, journalism majors, and others who can utilize the photographic medium.

Pictures of school activities are excellent for illustrating talks by school personnel at meetings of civic, parent, and other organizations.

The photographic department should serve the needs of other staff members in the production of instructional materials.



35mm CAMERA

The 35mm camera is used to produce 2 x 2 slides, filmstrips, and negatives for enlargements. These cameras are compact, have

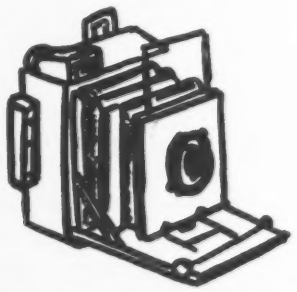
adjustable lens openings, variable shutter speeds and are especially flexible in recording subjects under about any light and action condition.

PURPOSE:

To produce 2 x 2 color slides.
To produce a filmstrip or a series of slides.
To produce pictures of excellent quality.

GOOD PRACTICES:

A good quality camera with flash and various lens should be available from the media center.
Slide sets and/or filmstrips should be produced relating to local industries, museums, libraries, and other places of interest in the community.
Slides of school activities are excellent for illustrating talks by school personnel at meetings of parents, civic, and other organizations.
The 35mm camera may be used to copy color pictures from magazines, books, and other publications for projecting as 2 x 2 slides.



4 X 5 VIEW CAMERA

The 4 x 5 view camera may be used as a portable (press) camera for taking pictures of classroom activities and other school events in many locations. The 4 x 5 view camera may also be mounted on a tripod and used in a studio-type environment.

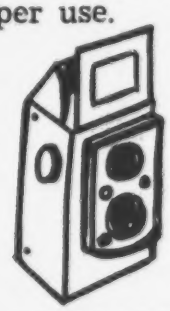
PURPOSE:

The 4 x 5 view camera uses sheet film and produces a high quality picture.
The view camera allows the photographer to view the subject or scene before taking the picture.

GOOD PRACTICES:

Pictures produced with the view camera are excellent for yearbooks, newspapers, and other forms of publications.

By using high contrast film, excellent transparencies for the overhead projector may be produced.
The view camera is rather large and provides a good model from which to teach photography to students.
Many local newspapers will provide film already loaded in film carriers in exchange for photographs which are suitable for newspaper use.



2¼ X 2¼ TWIN LENS REFLEX CAMERA

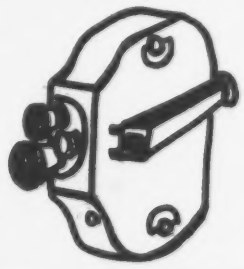
The 2¼ x 2¼ camera is small and easily carried by students and/or staff and produces a negative of sufficient size for easy printing.

PURPOSE:

To provide a camera which is easy to operate and easily carried by students and staff.
To produce good quality photographs.
To provide a camera which will produce many pictures from a single roll of film.

GOOD PRACTICES:

The twin lens reflex camera uses roll film which can be exposed, developed, and printed by students.
Cameras and film should be readily available from the media center for qualified students and staff.
Color film should be used only when color is important to the use of the picture.



MOVIE CAMERA

The movie camera is used to record scenes, events, or other activities where motion is important.

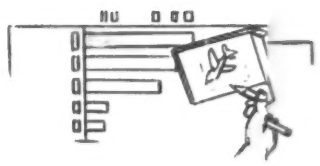
PURPOSE:

To record athletic events to evaluate performance of players.
To film school events where motion is involved.
To film events, processes, and activities which have educational value.
To show sequences and process that take place over long periods of time.
To demonstrate proper motions.

GOOD PRACTICES:

Movie cameras should be purchased which use the same size film as available projectors (i.e., 16mm or super 8).
Detailed story boards should be developed before beginning the actual filming process.
Students should be allowed to check out cameras to use in producing reports or filming important events.
Cameras should be available from the media center rather than from any one department of the school.
Movies produced locally should be carefully edited before showing to a class or other group.
Sound may be added to movies by adding a magnetic sound strip to the film or producing a sound tape to use with the movie.

Graphics
In the Classroom



LETTERING STANDARDS

Lettering can be segregated into three basic grou[ps namely] Roman, Gothic and Text styles. From these three all [alphabets] originate. The simple elements from which they are [composed] are easy to learn and not hard to form either by han[d using a] pencil, sho-card brush or special lettering pen and staff s[uch as the] Speedball pen, or a mechanical lettering guide such as [the Leroy] or the Wrico.

Nearly all visuals and displays require some le[ttering. A] visual will be no better than its lettering regardless of t[he quality] of its illustration. Good lettering for use in the classroo[m must be] legible and attractive and sufficiently large to show up [well on a] poster or an overhead transparency.

PURPOSE:

Teachers should attempt to become more aware [of various] lettering devices and techniques which will hel[p teaching] materials better convey ideas and concepts to [their stu-] dents. Good lettering is as essential in making [effective] transparencies and posters as it is in display a[dvertising] for the print or television media.

GOOD PRACTICES:

Time and effort will be minimized by using th[e size and] style of pen, brush, guide or device which will [form the] different letters of any given alphabet without s[ubsequent] remodeling of the strokes necessary to shape [the letter.] Gothic letters, sometimes referred to as "Groc[ery store"] letters, should be composed of uniform width [elements.] Roman letters, the most common type as seen in [magazines] and newspapers, are composed of thick and thin [elements.] Text letters include all styles of Old English Te[xt, Church] Text, Cloister Text, Black Text, German Text[, Bradley] Text, Gordon Text, and others.

Labels and captions should be kept short and sim[ple. There] should be no unnecessary verbiage, word choice [should be] crisp and to the point.

Lettering style should be simple. Exceptionally [fancy let-]

ters should not be used as the reading becomes difficult and tiring to the eyes.
A uniform height should be used in lettering materials. Horizontal guide lines, drawn with a pencil, may be useful in keeping lettering straight and uniform.
Spacing of letters should be done optically. Estimate space needed for lettering by counting spaces, leaving two to four spaces between words; then, adjust the estimate by allowing 1½ spaces for M and W and ½ space for I.
Generally, it is best to allow about 1¼ to 1½ spaces for M and W, and ½ space for I.
Be sure captions can be read from a distance when used on displays and be sure that lettering is proportionate in size to the rest of the layout whether for production of overhead transparencies or educational filmstrips.
In lettering projection materials, such as overhead transparencies or 3¼" x 4" slides, care must be taken to see that the letters are large enough to be easily read when projected on the screen. Templates which may serve as a guide for lettering on projection materials are available.
Good spacing is more important than good lettering. Many beginners who can make a fair alphabet have trouble with letter spacing. If an effort is made to equalize the space between the letters while learning their construction, the completed word or phrase will not have an even tone over all and will produce a result that is generally detrimental to legibility.

DRAWING AND COMPOSITION

Drawing is the art of rendering pictorially one's ideas of the forms of nature using the lines, shapes, tones, shadows, and textures which add materially to these forms.

PURPOSE:

Good composition is essential to any design, layout, poster, transparency, or graphic production to be employed within

the school. The ability to conceive an idea, a mental picture of something to be used to further the instructional process, followed by the ability to draw meaningful symbols and place them in a logical, eye pleasing arrangement characterizes an imaginative and creative teacher. Add a note of resourcefulness and we have a composite picture of an enthusiastic classroom teacher.

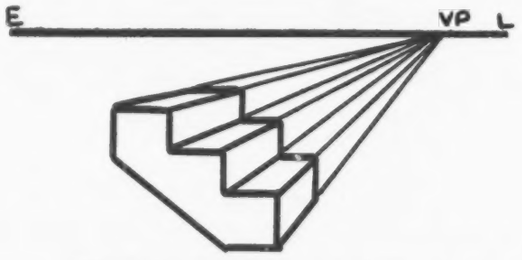
GOOD PRACTICES:

Before beginning to draw, close your eyes and try to see the subject or to visualize the complete layout. Develop the conception of the subject. Thumbnail sketches, even scribbles can be helpful as you begin to develop your composition.

Make sketches, hunt up clippings, go to any available source for correct information. Many magazines can be an excellent source for ideas or actual cutouts for pasteup additions to your original composition.

You must not think only of one single aspect of drawing as for example contour, without the other essentials, but rather, seek to unify all aspects into a complete and organized whole.

Consider proportionate relationships of the items within the three dimensions of your composition. Consider placement or the positioning of these items in the space to be filled. Be concerned with surface appearances as defined by light and shadow. Consider patterns as deliberate arrangements of the tones of the subject.



PERSPECTIVE DRAWING

Perspective is a study that deals with the appearance of objects as regards their size and the direction of their lines seen at varying distances and from any point of view. The word objects here is used to include the surface of the earth, sea and sky and all living things as well as those familiar forms that we call objects.

A very simple general rule related to receding parallel lines is the most important requisite to pictorial representation. The

rule is stated as follows: "All receding parallel lines appear to meet in a point." As an illustration, we can consider an observation that most of use have made at one time or another. As we stand between the rails of a railroad track looking along them into the distance we notice that the rails — known to be parallel — actually appear to meet in a point on the horizon line.

PURPOSE:

A basic knowledge of perspective is fundamental to any drawing or depiction of realistic objects. Though a poster may include a subject matter that evidences only slight depth, an awareness of the rules of perspective is vital to pictorial accuracy. It is one thing to work on a two-dimensional surface, but it is quite another to present the appearance of three dimensions. Thus, perspective sketches closely resemble photographs of objects.

GOOD PRACTICES:

It might be beneficial for the beginner to use a sharp pencil and some kind of straight edge device until that time when perspective becomes a way of thinking. Perspective must not dominate to the extent that the linear character of the design overwhelms the easy graduations of tone throughout the composition. Tone determines the unity and general character of the composition.

GRAPHIC PROCESSES

Graphic processes lend themselves to free expression and creative work. A creative teacher will sense a certain satisfaction when experimenting with the many graphic techniques.

Graphics are among the commonest of the communications media. The term is used to represent the closely related forms which include symbols, words, pictures, or drawings. The word graphics comes from the Greek and means drawings or representation by lines. Whenever there is need to catch attention, present facts succinctly, or "sell" an idea, some form of graphics is employed. Teachers and students use them for the same reasons. They are so

important in education that the teacher who cannot read graphics suffers from a form of illiteracy; the teacher who cannot produce graphics lacks one kind of ability to communicate.

The kinds and types of graphics grow constantly. There are six major forms, graphs, charts, diagrams and sketches, posters, cartoons and comic figures, and maps and globes. It is often difficult to distinguish one form from another — for example, the differences between a chart and a graph, a diagram and a chart, or a cartoon and a comic figure are not easily discernible. At times two or more forms are combined into one representation.

PURPOSES:

Since graphic presentations are visual presentations, they attract and hold attention. They can describe and clarify ideas and relationships *that are* difficult to express in words, numbers, or formulas. Because they are often abstract presentations, their scope is wide and their applications are many.

Perhaps the greatest advantage of graphic presentation is in its ability to communicate faster.

Another advantage lies in the fact that a well-designed and executed graphic display can often depict the relationship between variables so clearly and vividly that the writer or speaker does not have to "spell it out." The viewer has the pleasure of discovering "it" for himself.

GOOD PRACTICES:

A graphic presentation should not be produced simply to be admired, or to be funny, or to be dramatic. It should be prepared and used when it will do the job better and quicker than any other method of communication.

Finally, the teacher should appreciate the teaching-learning potential of the graphics area.

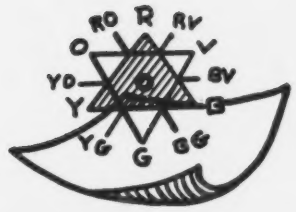
He should acquire skill in using these materials in instruction.

He should develop some skills in the preparation of commonly used graphics — maps, charts, and so on.

He should know the sources of these materials and the free and inexpensive materials available.

Most importantly, he should learn how to use graphics in conjunction with all other audiovisual materials.

Color
In Visuals



Color is one of the most important elements in a visual. Therefore, a knowledge of the effect of color is most important in visual planning. The following are associations usually credited to certain colors:

RED — excites nerves, arouses feeling of motor impulses.

ORANGE — is heating, soon excites irritation.

ORANGE-YELLOW — is warm, lively, growing.

YELLOW — arouses joy and gaiety.

YELLOW-GREEN — is cheerful, smiling.

GREEN — is restful, soothing, neither warm nor cool but neutralizing.

BLUE — is cooling, quieting, expresses serenity

BLUE-GREEN — is sedate and somber.

LAVENDER — is tranquil.

VIOLET-BLUE — is stern, hard, unyielding.

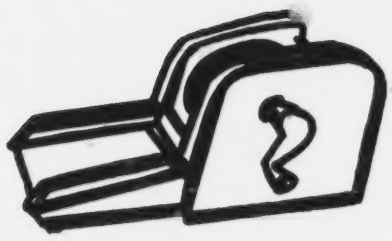
PURPLE — suggests stateliness, solemnity, richness, royalty.

WHITE — suggests purity, spiritual superiority or physical immaculateness.

BLACK — indicates spiritual darkness, gloom and death.

Visibility of color is important but colors should be used wisely. Purple is the least visible color, and is thus used as a standard of comparison. Yellow has twelve times the visibility of purple; orange, nine times; green, seven times; red, five times; and blue, three times. Extremely pure and highly intense colors should be used in moderation if used at all.

Duplicating Equipment



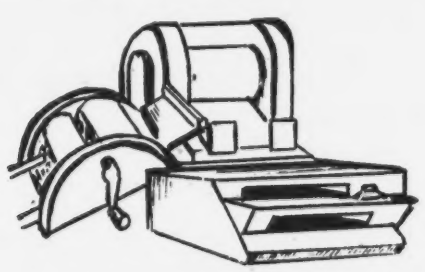
Every classroom teacher has many occasions for sharing material with someone else or providing enough copies of some material for classroom assignments. Principals and other administrative personnel also need a method of providing good quality copies to disseminate to school patrons.

PURPOSE:

To provide one or many copies.
To disseminate ideas and information.
To provide practice sheets.

GOOD PRACTICES:

Only material which has educational value should be used in the classroom.
Use the method and the kind of paper that produces good copies for the desired purpose.



SPIRIT DUPLICATOR

The spirit duplicator, which derives its name from the use of an alcohol-base fluid, is probably the most widely used machine for producing copies of materials for classroom use. Many different manually and electrically operated models are available.

PURPOSE:

To provide inexpensive copies for classroom use.
To provide an easy method of duplicating written or printed material.

GOOD PRACTICES:

Use ballpoint pen or typewriter in preparing the master carbon.

Turning off the flow of fluid after each use saves excessive evaporation of fluid.
Using carbons of various colors in the preparation of the masters provides multi-colored copies.
By using a primary (large-type) typewriter to prepare the masters carbon, the duplicated materials are ideal for use in lower elementary grades.
Corrections are made by scraping off the carbon from the back of the master and then typing in the correct letters.

MIMEOGRAPH

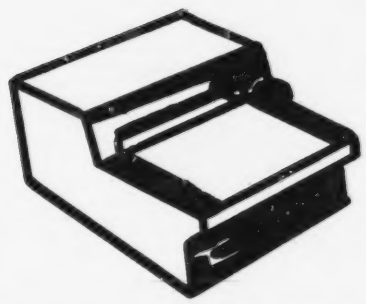
The mimeograph machine uses a stencil and ink in the printing process, thus providing an almost unlimited number of good quality copies. Although the initial cost of the stencils is more expensive than a master carbon for the spirit duplicator, the mimeograph process is recommended when large quantities of printed materials is desired.

PURPOSE:

To provide a large number of copies.
To provide copies that are of very good quality.
To provide a relatively inexpensive method of producing curriculum guides, policy books, and other publications of local school system.

GOOD PRACTICES:

The production of mimeographed materials is usually done by the school office staff.
A filling wax is used to make corrections.
Mimeograph stencils may be stored for future use.
Inks of different colors are used to produce copies in different colors or multi-colored copies.
Electric stencil cutters may be used to produce a stencil of pre-printed material.



INFRARED HEAT COPIERS

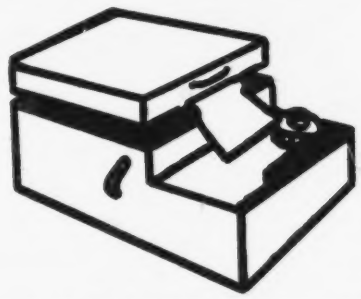
Usually called a "thermo" copier, this type of equipment will reproduce a single copy of any printed material that has been printed with carbon or metal base ink.

PURPOSE:

To produce a single copy.
To produce an overhead transparency.
To produce a mimeograph stencil.
To produce a spirit master.
To laminate.
To color lift.

GOOD PRACTICES:

Remove all paper clips, staples, and other metal fasteners before inserting material.
Since the thermo copier produces so many different materials for use by the classroom teacher, it should be readily accessible to the classroom teachers.
If many copies are desired, then it is recommended that another process that is cheaper and faster be used.



DRY PHOTO COPIERS

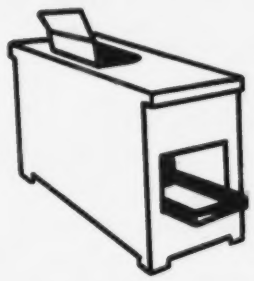
Dry photo copiers produce a good quality copy, but due to the fact that the original image must be transferred to an intermediate sheet and then onto the copy paper, this process tends to be slower and more expensive than other methods.

PURPOSE:

To provide copies of excellent quality.
To copy all visible print or other image.

GOOD PRACTICES:

Dry photo copies are usually acceptable as the original copy in providing proof of checks, invoices and purchase orders.
When single copies are needed, use the dry photo process, but for multiple copies use another method of duplication.
A secretary or some other person should be in charge of operating the dry photo copier.



ELECTROSTATIC COPIERS

Electrostatic copiers are used to reproduce single copies of printed materials. Although they copy any visible color, they reproduce in shades of black and white. The process involves the "charging" of a sheet of paper which passes through a toning fluid or dust and then heated to fuse the print to the paper. Exceptionally good copies may be obtained with this process.

PURPOSE:

To copy all visible print.
To provide single copies of high quality.

GOOD PRACTICES:

Although usually more expensive, machines that reproduce from both sheet and bound originals are recommended.

Dry Mount Press

The dry mount press is fast becoming one of the most outstanding and most widely used mounting processes. The dry mounting press in a simple piece of electrically operated equipment which applies both heat and pressure. Dry mounting tissue is coated on both sides with adhesive to mount flat prints either temporarily or permanently to cloth or cardboard. The dry mount press may also be used to laminate or to do color lifting.

PURPOSES:

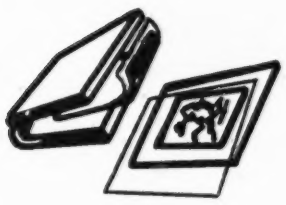
To preserve and protect flat prints.
To provide ease in displaying and storing flat prints.
To provide an easy and convenient method of mounting and laminating flat pictures.
To provide another method for doing color lifts.

GOOD PRACTICES:

Detailed instructions should be posted near the dry mount press.
Use newsprint or other inexpensive material to cover both sides of the material to be dry mounted or laminated to protect the heated surface of the press.
Never attempt to close the dry mount press on material which is too thick.
A good supply of mounting tissue and laminating material should be kept in stock.
Careful selection of materials to include the following:

a. Interest and grade level.
b. Attractiveness and eye appeal.
c. Simple and direct topic.
d. Balanced arrangement of mounted subject.

Lamination



Lamination has become an important process in the production of educational media. The process consists of adhering a clear plastic material to a flat picture or other similar material. Many different methods are now available to achieve the desired lamination. (i.e., drymount press, laminating machines, thermal copying machines.)

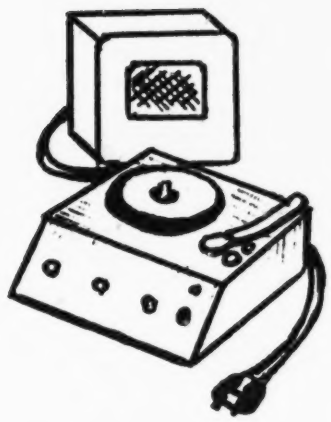
PURPOSES:

To protect and preserve flat pictures.
To secure leaves, feathers or other thin materials to a flat surface such as cardboard for ease in handling and displaying.
To waterproof and soilproof important pictures and documents.

GOOD PRACTICES:

Lamination tends to be rather expensive so only the more important flat pictures should be processed in this way.
Bus passes, activity tickets, and identification cards may be laminated to increase their usefulness.
Materials to be laminated should be heated to drive out moisture before the lamination is applied.

Audio Equipment



RECORD PLAYERS

A very effective teaching device is the use of record players and disk recordings. They add many learning experiences from many fields of education.

One of the newer developments is disk recordings that are synchronized with filmstrips therefore making sound filmstrips.

PURPOSE:

Cheap method of providing learning experiences.
Can create good listening habits.
To put sound into filmstrips.
May be used for recreational purposes.
Easy to use.
Wide range of available materials.
May be auditioned and analyzed before purchase.

GOOD PRACTICES:

Purchase only three or four speed turntables.
Purchase a reliable brand.
Look for simple operation.
Maintenance only by qualified personnel.

THE MAGNETIC TAPE RECORDER

The tape recorder is not a new medium of communication, yet it is relatively new in the field of education. Many technological improvements have been made in the recording field in recent years. Some of these features are transistorized equipment, stereo, add-a-track, and lighter, more portable machines.

The recording of sound on magnetic tape is accomplished through the process of reducing all sounds to an electric impulse and then amplifying this impulse and recording it on oxide tape. The voice or other sound is projected into a microphone and through this medium is reduced to the electric impulse.

There are two types of microphones commonly used in the classroom, the omni-directional microphone and the directional microphone. Omni-directional microphones receive sound from full 360° range. The directional microphone receives sound from narrowed range of 180° or less.

The microphone is the initial unit of the recording system and one of the most important. Sound can be no better anywhere in the system than that which the microphone picks up. The microphone technique improves with practice and experimentation.

Recording is done at varying speeds ranging from 15 ips (inches per second) to 1⅞ ips. The faster the tape moves, the better the quality of recording. For this reason it is best to use the faster speed for recording music and other materials where quality of recording and reproduction are of prime importance. Many of the economy priced monaural recorders are equipped for only two speeds of recording.

PURPOSE:

To preserve radio programs for future use.
To record and play back speeches, music or other sounds.
To allow pupils to record their own voice and observe speech defects and pronunciation.
To record and use sound effects in dramatic presentations.
To up-grade teacher presentations for classroom instruction.

To provide musical accompaniment for vocal students.
To aid in speech therapy and foreign language.
To provide "sound track" for slides, filmstrips, or pantomimes.
To provide environmental music.
To record the sounds of nature encountered on a field trip.
To give tests to individuals while teacher performs other functions.
To record lectures for absentee students or shut-in-students.

GOOD PRACTICES:

Encourage pupils to do individual recording.
Use tape recorder for practice in public speaking.
Re-use recording tapes by re-recording on those no longer useful.
Have pupils record radio and television programs for critical analysis.
Use as an aid to memorization.
Recordings should be reasonably short.
Tape recorders with earphone sets make ideal listening centers for individual students or a group of students.

EDUCATIONAL RADIO

Another effective audio-learning tool is instructional radio. Radio may be thought of as an electronic carrier wave that provides the means of spanning great distances, bringing carefully planned audio-learning experiences into large cities as well as into rural classrooms. Radio is the means of bringing audio-learning experiences into classrooms where often related visual experiences may be coordinated with it. The radio has the following advantages:

1. IMMEDIACY — One can listen in on the event itself and can be as up-to-date as the latest broadcast.
2. REALISM — An announcer who tells listeners what he sees as he sees it may be more impressive than a newspaper reporter dealing with identical matter.

3. SPACE AND TIME — Through on-the-spot broadcasts or through simulated history, radio can actually overcome the barriers of space and time.
4. EMOTIONAL IMPACT — In this time when television and the pictorial arts have been increasingly developed, we must never forget that the voice alone, or music alone, or certain kinds of sound alone, can convey deep emotional experience.
5. AUTHENTICITY — Radio has been often used to bring into classrooms the first kind of expertness and authority in subject matter.
6. INEXPENSIVENESS — Radio can be used inexpensively when there is need to emphasize local problems or conditions. Because it reaches many people, its per capita cost is small.

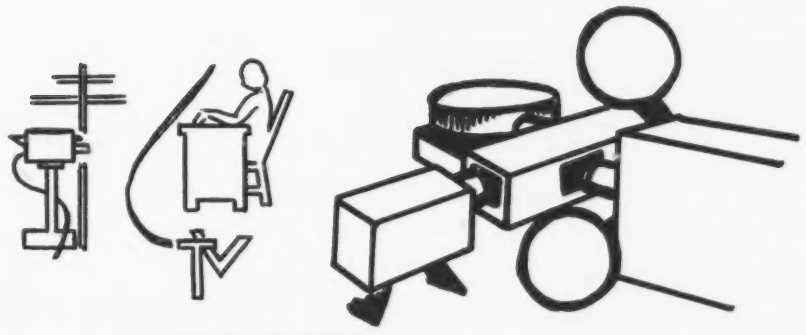
PURPOSE:

Radio instruction can — through the combined effect of voice, environmental sound, and music — capture the pupil's attention, arouse his imagination and promote creative activities.
Radio provides learning experience of a specific type — experiences of "pure listening."
Educational radio broadcasts provide "listening participation in current history."
School broadcasts are effective means of presenting music for its studied appreciation.
Radio may be used to inform pupils of school happenings and calendar of events.

GOOD PRACTICES:

Radio listening should be selected on the basis of its real contribution to learning.
Prepare learners for effective listening by helping them to create interest in the material.
Recognize and remove any barriers to successful listening.
Provide the best possible physical conditions for listening (seating arrangement, equipment, etc.)
Arrange for evaluation and creative follow-up activities.

Newer Media



TELEVISION

Instructional television programs are designed to support instruction in the classroom. Television course content is recommended by committees of teachers and decisions are made by people responsible for curriculum decisions. Of all instructional media, television offers the best opportunity for bringing into the classroom the latest innovative teaching techniques and the most current teaching methodology in particular subject areas. The effectiveness of instructional television is highly dependent on two conditions. First, the television presentation must be designed for the medium. This condition includes the organization, sequence and presentation of the television lesson. It also includes all the techniques used in supporting the presentation. Secondly, the receiving situations in the classroom must be suitable for the reception of the television presentation. This condition includes the suitability of the schedule, the attitude of the receiving teachers, the technical quality of the transmission and the supportive attention given to the program after its telecast. Following are listed some important purposes and good practices each classroom teacher should consider when using instructional television.

PURPOSE:

Provides a means for sharing outstanding teachers and rich resources with numerous classrooms and individuals.
Provides a natural situation for the team approach to teaching.
Provides every student with a front seat and eye to eye contact with the teacher.
Provides for the sharing of resources with children who are home-bound or in the hospitals, as well as with the entire lay population.
Provides for bringing important events into the classroom as they occur.
Provides pupil stimulation and motivation in the learning process.
Provides potential for the teaching of modern content which is too recent for inclusion in current textbooks.
Provides stimulation for reading and research.

Provides opportunities for the professional growth of teachers.
Provides instructional opportunities for one or more large groups simultaneously.

GOOD PRACTICES:
Have and use a teachers manual that has been prepared for the program.
Follow up the lesson with meaningful discussion or other forms of extension of the televised lesson.
Locate the television set so that all pupils can see without window or light reflections on the set.
Support the television programs with a cooperative attitude — this attitude will be observed by pupils.

THE VIDEO TAPE LESSON

The production of a video tape lesson incorporates many of the principles involved in the production of motion pictures. It is very similar in many respects. This outline is suggested regardless of the type of production you have: single concept, documentary or an ad-lib performance in the classroom. The same principles would be involved if you used a single camera or a multi-camera production.

Following is an outline for the production of a televised lesson or part of a lesson such as that presenting a single concept.

I. Start with a definite idea or purpose
  1. Expand the idea
    a. objectives
      (1) Exactly what concept or series of concepts do you wish to present?
      (2) Audience
      (3) Special behavioral changes
        (a) Skills
        (b) Processes
        (c) Attitudes

2. Develop an outline
   a. Write the script
   b. Give camera treatment
      (1) Long shots (L.S.)
      (2) Medium shots (M.S.)
      (3) Close-up (C.U.)
      (4) Angle Shots
   c. Prepare the visuals
      (1) 3 to 4 ratio
3. Select the equipment
   a. Video tape recorder
   b. Camera or cameras
   c. Tape
   d. Monitors
   e. Lighting
   f. Auxiliary equipment
      (1) Microphones, mixers, cables and connectors
4. Shooting crew
   a. Director
   b. Camera men
   c. Video Tape Recorder operator
   d. Props handler
   e. Demonstrator, teacher or other talent
5. Necessary prepared materials
   a. Graphics
      (1) Charts, diagrams, camera cards and others
      (2) slides and filmstrips
      (3) photographs — mounted
      (4) motion pictures
         (a) Film clips 8 mm or 16 mm
      (5) overhead transparencies
      (6) 3-D materials

PURPOSE:

The video tape recorder is an instrument which is rapidly gaining favor within the classroom. It now is within a price range favorable to many school systems and locally produced and commercially obtained tapes are no longer considered remote ideas in the classroom of today.

The instrument, however, must be used wisely, and then only after considerable lesson planning and thoughtful consideration of its appropriateness to the particular lesson. The classroom teacher today is readily adaptable to this medium.

Size alone is insufficient evidence of the portability of this instrument. Care in handling and close cooperation between in-

structor and television personnel is necessary. A quality video tape lesson will in a comparatively short time present the concepts which formerly took much longer with more traditional presentations. A good telelesson will promote only the selected learning and will not deliberately promote the instrument itself.

GOOD PRACTICES:

Shooting
a. Follow script except where change is necessary.
b. Use special camera techniques to emphasize important points.
c. Use visuals in the most effective way.
d. Lighting (key, back and fill)

Editing
a. Picture and sound
b. Sound only
c. Revise, if you feel the production would be more effective.

Evaluation
a. Picture quality
b. Sound quality
c. Content quality
d. Would you use the production if you had not produced it?

PROGRAMMED INSTRUCTION

A. The "Systems Approach" in Programmed Instruction:

The most significant development in education in recent years is the 'systems approach', with the shift in emphasis from group instruction to individualized instruction. This change in approach to education with the resulting change in role of the teacher is the result of programmed instruction.

In programmed instruction, a 'program' takes the place of a tutor for the student. The student is led through a series of specific behavior designed and sequenced to make it more probable that he will behave in a given way in the future — in other words he will learn what the program is designed to teach.

The program is the most important thing about programmed instruction. It is usually a series of items, questions, or state-

ments to each of which in order, the student is asked to make a response, his response may be to fill in a word left blank, to answer a question, select one of a series of multiple choice answers, to indicate agreement or disagreement, or to solve problem and record the answer. As soon as he has responded to an item, he is permitted to see the correct response so that he can tell immediately whether his response has been the right one. Items are written so that the student is likely to get mostly correct responses; this immediate knowledge of success reinforces the student.

B. Types of Programming
   1. Linear programing
      A program where there is only one sequence.
   2. Adaptive programming (often called Branching)
      In this type of program each frame (item) presents the student with multiple choice answers and the answer chosen determines the program to be followed. Each student will receive instruction according to his needs.

C. The Basic Characteristics of Programmed Instruction:
   1. Small steps.
   2. The student is required to be actively involved.
   3. Immediate knowledge of results are supplied to the learner.

D. Characteristics of the System Approach to Instruction:
   1. Rate is varied for each individual.
   2. Students PROCEED individually.
   3. Materials and methods are varied for each pupil.
   4. Content is presented by technology.
   5. The teacher freed from content presentation can devote more time to solving learning problems.
   6. Learning is constant. (Advances only when content is mastered).

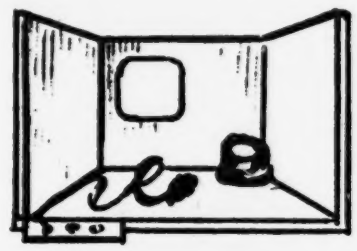
E. In the System Approach the Teacher:
   1. Diagnoses learning problems.
   2. Prescribes appropriate learning experiences and technology.
   3. Lets technology present content.
   4. Provides individual guidance and counseling.
   5. Continuous evaluation of both student and program.

PURPOSES
   1. Major means of presenting content.
   2. Supplemental for accelerated students.
   3. Supplemental for students having difficulties.
   4. Catch-up for late entrants.

5. Catch-up for students who have been absent.
6. Motivation.
7. Homework
8. Additional courses.

GOOD PRACTICES

There are many methods of presenting programs to students from simple programmed text, teaching machine, to the computer. We can choose a method that fits our pocketbook. A wise instructor, knowledgeable in a variety of learning processes and aware of the learning requirements will give due consideration to the "systems approach" in learning. The adaptation of program learning techniques to self-instruct or autotutoral instruction has resulted in the "systems approach" of instruction and the characteristics given above must be known and freely utilized by the instructor.



DIAL ACCESS

Dial access is a relatively new medium in education which is rapidly coming into popularity. It is important to remember, however, that the information received from the data bank is only as good as the level of competency of the programming individual.

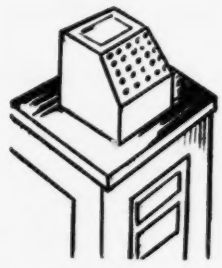
The "sophisticated dial system" is made up of a computer that directs the users dial signal to the proper source by controlling audio and/or video switching gear that starts and directs the program to the users station or carrel.

PURPOSE:

Dial access has varying purposes. The purpose for which a school will use it is dependent upon that school. An educational organization, in order to justify expenditures for such a system, must make it an integral part of the instructional program. One purpose that dial access has been accomplishing is that it permits students to gain access to lesson materials at varying times without limiting teacher location. Teachers should, as a result, be more accessible to individual pupil inquiry.

GOOD PRACTICES:

Faculties must plan and prepare audiovisual materials in advance.
Faculties must schedule materials for dial access in advance.
In utilizing dial access, faculties are only limited by their willingness to innovate and produce.
Faculties must take into consideration the recommended procedures for the preparation of good audio tape recordings, video taping, 2 x 2 inch slide preparation, and television principles in general. In the final analysis, dial access is nothing more than a sophisticated use of audiovisual materials.



COMPUTER BASED INSTRUCTION

In addition to the manipulation of numbers, the computer may be used to control teaching sequences. Stimulus material may be stored in the computer to be retrieved and/or transmitted to the student on a typewriter output, or on a cathode tube somewhat like a television screen. The student may interact with the material by typing answers to questions on the typewriter, by using a light stylus placed on the cathode tube, or perhaps by just pressing buttons. The computer is flexible in that it is capable of modifying its own mode of instruction during the training session. For example, it is capable of determining the sequence of items to be presented to the learner and of notifying him if a response is correct or incorrect. It may also carry out the analyzing activities necessary to determine the sequence of stimulus materials which will best aid the student in reaching the objectives.

PURPOSE:

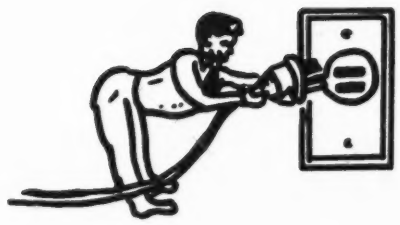
The computer may be used as a teaching machine since it has the capability of branching students forward, backward, and laterally through subject matter.
It is especially useful for meeting the individual needs of students with different backgrounds, motivations, and aptitudes.

The computer is best suited for highly sophisticated analysis and manipulation of gross data into learning patterns.
The computer through simulation programs can add realism to a training situation.
Capability for a variety of possible responses makes the computer effective for gaming.
The computer may be used as part of an information retrieval system.

GOOD PRACTICES:

Careful, long-range planning for the installation of computer equipment should consider the necessity for using the computer for the planned teaching task.
After the installation of a computer for use in instruction, this careful, long-range planning is necessary for an efficient operation.
Due to the expense, the computer should be used primarily for the purpose for which it is best suited, namely, the manipulation of highly sophisticated data.
To offset the high cost of installing a computer center, neighboring schools might share a center on a cooperative basis or a regional center could be developed by the state.

Electrical Safety



The rapid increase in the use of electric appliances in the instructional process warrants a statement of safe practices with such equipment. These appliances are used both by teachers and students, therefore, the teacher should assume the responsibility of being sure that students employ safe practices while using electrical equipment.

SAFE PRACTICES:

1. Avoid handling equipment when wet or standing on a damp surface.
2. Circuits should never be overloaded.
3. Avoid octopus or spider connections at an outlet.
4. Circuits should be checked against equipment manufacturers' recommendations before connecting to an electric current.
5. All electrical equipment should bear the label of a qualified testing agency such as United Laboratories.
6. Equipment should be connected directly to wall outlets.
7. Equipment should be disconnected at the wall when not in use.
8. Equipment should be disconnected at the wall or extension cord outlet when changing lamps or fuses.
9. The noncurrent-carrying parts (housing or case) of the appliance should be effectively grounded to avoid shock.
10. All equipment should be inspected regularly for insulation deterioration.
11. All electrical and mechanical repairs should be done by a qualified repairman.
12. Extension cords should be placed where there is no danger of anyone tripping over them.
13. Extension cords should be approved by a testing laboratory for the purpose they are to serve.
14. An extension cord should serve only one piece of equipment at a time.
15. Attachment caps, commonly called plugs, should be blade type as opposed to socket or screw-in type attachments.
16. Never bend or twist the blades to force them into an outlet.
17. Federal regulations require a case ground or tri-plug for most electric appliances used in schools.

School Projectionists' Clubs

The average school system has found it impossible to provide enough trained adult operators to carry out the work of projecting the various media now used in the instructional program. Schools have also found that very few classroom teachers feel competent to operate the various kinds of audiovisual equipment, so it is suggested that student projectionists be trained and made available to operate equipment when needed.

PURPOSES:

To provide a service to classroom teachers.
To provide training for students who have the interest and aptitude to operate equipment.
To motivate students to pursue a career as a media specialist.
To provide trained operators who know how to properly operate and maintain audiovisual equipment.

GOOD PRACTICES:

The audiovisual specialist should sponsor the student projectionists' club.
Membership cards and certificates may be obtained from the School Projectionist Club of America, P. O. Box 44, State College, Pennsylvania, 16801.
One-half credit or more may be given to students who complete training and serve as student projectionists.

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